

NON-PUBLIC?: N
ACCESSION #: 8901120502
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Quad Cities Unit One PAGE: 1 OF 4

DOCKET NUMBER: 05000254

TITLE: Reactor Scram Due to Stop Valve Closure From A Turbine Trip - Cause
Undetermined
EVENT DATE: 12/05/88 LER #: 88-016-00 REPORT DATE: 01/03/89

OPERATING MODE: 4 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: James Griffin,
Technical Staff Engineer, Ext. 2147 TELEPHONE: (309) 654-2241

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE TO NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On December 5, 1988, Quad Cities Unit One was in the RUN mode at 100 percent core thermal power. At 1445 hours, a reactor scram occurred due to turbine stop valve closure. The stop valve closure was the result of a turbine trip. All safety feature actuations occurred as designed. A normal scram recovery followed. NRC notification of this event was completed at 1733 hours to satisfy the requirements of 10CFR50.72(b)(2)(ii).

The cause of this event could not be determined. The Instrument Maintenance Department performed extensive tests and checks on limit switches, pressure switches and fuses related to turbine trip logic. No instrumentation problem which could have caused the trip was found. At the time of the trip, no work was in progress in the areas of instruments involved in the turbine trip logic, and the Instrument Maintenance Department was not involved in any calibrations or surveillances.

Unit One was started up at 1648 hours on December 6, 1988, and put on-line at

0940 hours on December 7, 1988. No turbine trips have occurred since the startup. This report is provided to comply with 10CFR50.73(a)(2)(iv).

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END OF ABSTRACT

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PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 MWt rated core thermal power.

EVENT IDENTIFICATION: Unit One Reactor Scram Due to a Stop Valve Closure from a Turbine Trip of an Undetermined Cause.

A. CONDITIONS PRIOR TO EVENT:

Unit: One Event Date: December 5, 1988 Event Time: 1445
Reactor Mode: Four Mode Name: Run Power Level: 100%

This report was initiated by Deviation Report D-4-1-88-083.

Run Mode (4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

B. DESCRIPTION OF EVENT:

On December 5, 1988, Quad Cities Unit One was in the RUN mode at approximately 100 percent core thermal power. At 1445 hours, a reactor scram JC! occurred due to turbine stop valve (SV)V!TG! closure. The stop valve closure was the result of a turbine trip TRB!TA!. A reactor water level transient was caused by the collapse of the voids in the core due to the scram. This is typical of a reactor scram. The reactor water level dropped below +8 inches during this transient. This caused Groups 2 and 3 primary containment isolations (PSI)JC!, Reactor Building Ventilation VA! and Control Room Ventilation VI! isolations, and Standby Gas Treatment BH! initiation. Reactor water level was restored automatically by the Feedwater Regulating Valves FCV!JB! and the normal scram recovery continued. NRC notification of the event was completed at 1733 hours on December 5, 1988, to comply with the requirements of 10CFR50.72(b)(2)(ii).

Following the reactor scram, Instrument Maintenance (IM) and Operations

Department personnel began a detailed investigation that included reviewing the Electro . Hydraulic Control (EHC) panel, the sequence of events computer printout, and interviewing the various workers.

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The EHC panel (901-31, E Bay) contains indicators for turbine trip signals and distinguishes which signal arrives first. The panel indicated low condenser vacuum as the initial turbine trip signal. Additional trip signals included turbine main shaft oil pump low pressure, EHC low pressure, and turbine generator load reject. The low condenser vacuum pressure switches, EHC low pressure switches, and the turbine main shaft oil pump low pressure switches were all functionally tested in accordance with IM procedures. All the tests were concluded satisfactorily. In addition, both the electrical and piping components and the low vacuum pressure switch loops were checked. The electrical components were examined for loose connections, frayed or damaged wiring, or any shorts. The piping connections and mounting hardware were also inspected for secureness. The fuses in the EHC panel were verified to be intact.

The sequence of events computer printout of the control room alarms indicated that a turbine overspeed trip and turbine stop valve closure trips were received before the scram. Thus the overspeed trip device was visually inspected as were the connections, limit switches, knuckles, and collars on all the stop valves. No equipment problems could be identified; therefore, the turbine was tripped and reset while operating personnel observed the indicators at the front standard. No abnormal indications were noted. This was done at 0050 hours on December 6, 1988.

The possibility of a bumped instrument rack, instrument calibration or instrument test just prior to the event was also investigated. At the time of the scram, no work was in progress at the front standard, inside the turbine shield wall or exciter housing, the turbine oil tank, the unit or auxiliary transformers, or the 2201-5 and 2201-6 racks in the reactor building. These are the areas where turbine trip logic exists.

The Instrument Maintenance Department was not involved in any calibrations or surveillance tests at the time of the event. In addition, there was no indication that any racks had been bumped. All contractors that work in the areas where the turbine trip logic exists were interviewed. No contractor personnel in the areas at the time of the event noted anything unusual.

After discussions with the, Corporate Office, the following areas were

investigated: (1) Is the EHC panel checked each shift? (2) Are the proper annunciators received when turbine trip signals exist? (3) Do all turbine trips alarm in the control room or indicate in the EHC panel? (4) Are the EHC oil pressure switches operable?

From these suggestions, the station determined that the EHC panel is not checked each shift, but all turbine trip signals are accounted for in the control room alarms and EHC panel indicators. Proper annunciation for the turbine trip was verified by a manual turbine trip on December 7, 1988. The EHC pressure switches had already been determined operable.

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The results of the investigation were reviewed in On-Site Review 88-65. The On-Site Review participants recommended that unit startup commence and the Unit One Generator be brought back on line. Because the root cause of the trip was not identified, corporate approval was required and received prior to startup. At 1648 hours on December 6, 1988, Unit One commenced reactor startup. At 0900 hours on December 7, 1988, the turbine was manually tripped from the front standard as per the testing requirement from the On-Site Review. After the successful test, the generator was placed on line at 0940 hours. The unit was temporarily held below 300 MWe to verify that the turbine would not trip again. At 1630 hours, corporate approval was received to increase the load above 300 MWe, but at the Station Manager's discretion, load was held until the completion of overspeed testing. At 2140 hours, the turbine annual overspeed and backup overspeed tests were concluded satisfactorily. There have been no turbine trips since the startup.

C. APPARENT CAUSE OF EVENT:

This event is being reported according to 10CFR50.73(a)(2)(iv), which requires the reporting of any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF). The cause of this event could not be determined. No equipment failure, activities, or personnel were identified which could have caused the trip. No supplemental report is planned unless the root cause of the event is determined.

D. SAFETY ANALYSIS OF EVENT:

The safety significance for this event is minimal. The Reactor Protection System (RPS) responded as designed to scram the reactor. All systems responded as designed to bring the unit to shutdown condition.

E. CORRECTIVE ACTIONS:

No corrective actions were implemented as a result of this event. An enhancement was made in the surveillance of the EHC panels by revising QOS 005-S12, Operators Surveillance/Turnover Sheets Equipment Operator (EO), to have the EO's check the EHC panels (90X-31) once a shift (NTS 2542008808301). The EHC panels contain lights which indicate turbine trip signals. The EO's will verify during their check that no lights are lit during normal operations.

F. PREVIOUS EVENTS:

A review of the station's LER logs shows no documented previous event of an unexplained turbine trip at Quad Cities.

G. COMPONENT FAILURE:

There was no component failure identified in this event.

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CE Commonwealth Edison
Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242
Telephone 309/654-2241

RLB-88-397

December 16, 1988

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Reference: Quad-Cities Nuclear Power Station
Docket Number 50-254, DPR-29, Unit One

Enclosed is Licensee Event Report (LER) 88-016, Revision 00, for Quad-Cities Nuclear Power Station.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iv): The licensee shall

report any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS).

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

R. L. Bax
Station Manager

RLB/AAF/eb

Enclosure

cc: I. Johnson
R. Higgins
INPO Records Center
NRC Region III

167OH

*** END OF DOCUMENT ***
